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A GENEALOGICAL STUDY OF POPULATION.

By Carl E. Jones.

The study of the many phases of the population problem has been a product in large part of the nineteenth and twentieth centuries, the period which has seen the rise and development of so many of the various fields of knowledge and of investigation closely related to the welfare and interests of mankind. Attention was prominently called to the subject at a time when the writings of the English Classical School of Political Economy were coming into the foreground. The doctrines of the decreasing returns upon land, of the increasing pressure of population upon the material means of subsistence resulted in a certain pessimism in the popular thought of that day which was well expressed in the name, "The Dismal Science," given to Political Economy.

The great interest in the topics of a biological nature which arose one or two generations later has done much to modify the positions held by the earlier writers and to strengthen the basis upon which further work might be done. Still more recently various aspects of the problem have been dealt with by biologists, sociologists, and economists, and the results of their respective findings hold much of promise for the future.

The mode of approach in the study of population problems has resembled that used in other branches of the social sciences in that it has gradually shifted from the philosophical and speculative to the mathematical and explanatory. Malthus in his "An Essay on the Principle of Population" (11) and Spencer in part six of his "Principles of Biology" (15), give classic illustrations of the manner of attack which was employed by the first students of the problem. Crum (2) (3), Duncan (4), Hill (7), Lewis (9), and Mayo-Smith (12), have been more recent students of the problem who have employed statistical data as the main tool in their treatment of such factors as natality, fecundity, marriage ages, and duration of life.

The sources of statistical information regarding population in the United States most largely utilized hitherto, have been the national and state census figures. At the present time no other source is so copious and trustworthy but they do not afford an adequate basis for comparison of the present with other periods only slightly remote. Hence recourse must be had to whatever subsidiary material may be available for the purposes of comparing the population figures of the past one, two, or three centuries with those of the more immediate present.

For the purposes of comparisons for various periods of time, family genealogies furnish one of the most fertile fields of investigation. Since many American genealogies embrace the early settlers from whom many trace one line of their descent; a goodly number of them afford comparable data for two hundred to two hundred and fifty years. Ample time is thus afforded for the rise and fall and the cyclical development of such phenomena as fecundity and longevity to declare themselves.

The work of supplementing the results of national and state censuses by the data obtainable from genealogies is at present in its infancy. Bell has furnished some of the best results yet attained in this field. His recent publication, "The Duration of Life and Conditions Associated with Longevity—A Study of the Hyde Genealogy" (1) has given direct statistical proof for or against positions which formerly were dogmatically maintained, such as the inheritance of longevity, and the correlation between longevity and fertility. Sage has a recent work entitled "A Statistical Study of the Genealogical Records of New England" (14). One hundred genealogical lines, each covering the period 1620–1850, were studied. The data collected included dates of birth, deaths, and marriages of parents; details of second and third marriages; number and sex of children, dates and order of their birth, and dates of their death. Since the study traced the families only through the tail-male lines instead of through the whole family fraternity no basis was afforded for ascertaining the figures for important allied phenomena such as the inheritance of fecundity, the intervals between births, and the comparison of the fertility of the first-born children with the corresponding natality of the total population.

The aim of the present study is to obtain definite statistical data upon certain population characteristics; namely those relating to second, third, and fourth marriages; longevity; the correlation between longevity and fertility; the age at marriage; the correlation between marriage age and fertility; the fertility of parents by periods; the ratio of the sexes at birth; the intervals between births; twinning; and the fertility of first-born children. Each of these factors has been dealt with in turn and tables for each made which present the actual results obtained.

In explaining the method employed in attaining the completed tables, the sources or materials used will be described first and the process whereby the finished tabular results were obtained will then be outlined. Five genealogies were employed and complete indexing for each population trait studied was made of each individual within the family fraternities thus chosen. Each genealogy furnished approximately 4,000 individuals, and the five together furnished a total of 20,412 individuals. Incomplete returns for many individuals within each of the genealogies reduced the number of individuals used as a basis for each of the tables and hence in no case was a number as large as 20,000 obtained in the final tables.

The first step actually taken in the work was to obtain the figures for each one of the thousands of individuals for every one of the population traits to be treated. This process necessitated giving the most careful attention to each one of the household families listed in the several genealogies, since these were the units which afforded the bulk of the information regarding all of the topics under consideration.

The 20,412 individuals were distributed throughout approximately 4,000 such household families, each of the genealogies holding about 800 of this total figure. The compilation was next undertaken in order to get the mass of figures into significant totals and averages; and finally formal tabulation was necessary to present the material in clear and summary fashion. In the presentation of the results the findings for the five genealogies were lumped in the majority of cases since no significant differences were to be found in them. In such cases as twinning, however, where there were important differences, the material was tabulated by the genealogies as well as by the total figures.

In the 20,412 individuals listed were comprised all those persons born in the five genealogies and also the husbands and wives who married into these families throughout all of the successive generations. Approximately 16,412 individuals were born in the main lines of descent, while the remaining 4,000 married into the families. Ten successive generations contained all of the individuals within each one of the five genealogies. The distribution of the 20,412 persons among the ten generations may be approximately stated as follows: 12, 35, 65, 200, 600, 1,700, 4,800, 7,000, 5,000, and 1,000. The fall in the numbers of the ninth and tenth generations was due to the fact that the reproducing potentialities of the eighth and ninth generations had not yet had time to reach their maximum. What would otherwise have been a uniform rise in the distribution was thus vitiated by this condition, though some weight must be given to an undoubted decline in racial fertility.

In presenting the tabular results obtained, the subject of remarriage is the first to receive treatment. In the table which follows the years from 1651 to 1900 are divided into five fifty-year periods, in order to afford a basis for comparison of periods of equal length. The numbers of husbands having second, third, or fourth wives and the number of wives who remarried, who were born within each one of these fifty-year periods respectively, are tabulated.

TABLE I. REMARRIAGES.

Period	Second Marriages	
	Husbands	Wives
1651–1700	8	4
1701–1750	42	10
1751–1800	63	23
1801–1850	108	29
1851–1900	25	21
Total	246	87

Inspection of the figures discloses the fact that nearly three times as many men as women remarried. If third, fourth, and fifth marriages are taken into account, the 246 men who remarried had a total of 272 extra wives and the 87 women who remarried had a total of 94 extra husbands. A ratio of nearly three to one is maintained with these figures also. The figures for the last period are incomplete since so many of the individuals born within the latter portion of it did not have time to attain a marriageable age at all and hence could afford no data for remarriages.

There are very few other treatises of a similar nature with which to compare these figures. Bell does not attack the problem in "The Duration of Life and the Conditions Associated with Longevity." Sage, in "A Statistical Study of the Genealogical Records of New England," found a relatively large proportion of second and third marriages prior to 1850.

The genealogies show that the cause of the remarriages has altered somewhat. Before 1840 the cases were nearly all due to premature death upon the part of either the husband or the wife, generally the latter, and the subsequent remarriage of the one remaining. Beginning about 1840 the genealogies show that divorce assumes an ever-increasing part as a condition associated with second and third marriages. This increase in divorce beginning in 1840, as shown by the genealogies, is in full harmony with the findings of those who have made careful studies of the problem, for instance Lichtenberger, in "Divorce: A Study in Social Causation" (10).

The data for the longevity or duration of life will next be given and by fifty-year periods. No figures will be given for the period 1851–1900, however, since the only individuals born in this period who had died previous to the writing of the genealogies were those dying at comparatively youthful ages. Accordingly the data will be restricted to the four fifty-year periods from 1651–1850. The results are tabulated here according to sex; according to the number of individuals in each chronological group; and the average age-lengths for each of these groups is shown. The incompleteness of these genealogies is well illustrated by the small number of persons, 2,765, out of some 13,000 to 14,000 who had died, for whom the actual length of life could be ascertained.

TABLE II. DURATION OF LIFE.

Period	Males		Females	
	Number	Average Age	Number	Average Age
1651–1700...........	60	44.1	56	46.8
1701–1750...........	188	53.9	189	51.4
1751–1800...........	428	49.2	427	47.5
1801–1850...........	709	35.8	708	35.7
Total...............	1,385	42.8	1,380	41.9

Table II shows a shorter longevity for both males and females for the last period than for any of the preceding, but this is probably due to the fact that the last period contained a much higher percentage of those dying in infancy. As between the sexes, each of the fifty-year periods, with the exception of the first, which includes only a small number of individuals, shows a slightly higher age at death for the males than for the females.

Sage reports an insufficient record of deaths in infancy also and discounts the value of his tables. He finds that the age of males at death is higher than that of females. Bell found the average age of 1,606 males to be 35.8 years and that of 1,352 females to be 33.4 years, a difference similar to that found in this study. His lower figures were due to the more inclusive figures upon child-mortality to be found in the Hyde genealogy. Over 35 per cent. of the total number of deaths included in Bell's study occurred before maturity was reached, whereas in the genealogies here dealt with, the record of the decease of children has been much less complete.

The correlation between longevity and fertility is next given for both fathers and mothers. In the ensuing table the ages of parental deaths are grouped into class-intervals of five years each; the figures for fathers and mothers are given separately; and under each sex are the figures showing the number of deaths for that sex dying within each class interval and the average number of children born to each at the time of death. The term, fertility, is used rather than fecundity: the former refers to the total number of children born while the latter has reference to the number of times child-birth takes place. The occurrence of twins and triplets accounts for the difference between the numbers of the two phenomena.

TABLE III. LONGEVITY AND FERTILITY.

Ages at Death	Fathers		Mothers	
	Number of Deaths	Average Number of Children	Number of Deaths	Average Number of Children
18–22	0	0.0	1	0.0
23–27	3	0.7	6	1.7
28–32	5	2.6	9	2.5
33–37	15	3.7	13	4.4
38–42	27	4.1	21	5.0
43–47	23	5.1	26	5.0
48–52	19	5.0	23	5.2
53–57	34	6.7	26	5.8
58–62	35	6.6	27	5.4
63–67	48	5.4	39	6.0
68–72	49	5.1	44	6.2
73–77	52	6.9	34	5.8
78–82	54	6.1	44	6.2
83–87	43	6.2	24	6.9
88–92	20	7.5	21	8.0
93–97	11	7.6	7	7.6
98–102	3	9.0	1	7.0
103–107	1	10.0	1	5.0

This table shows that longevity and fertility are associated phenomena as regards both fathers and mothers. A longer period of reproductive capacity can not be the sole cause since fertility continues to increase in the age-groups after the powers of fecundity have ceased, especially in the case of the mothers.

Bell reached results which are nearly identical with these. He found that the number of children per marriage rose steadily as the age of the parents at death increased. Since he used class-intervals of twenty years rather than of five years he obtained figures which afforded a steady rise in the cases of both fathers and mothers.

In the table next given the distribution of the husbands and wives is given according to their age at marriage. In the first column are given the various marriage-age groups and in the other two columns are given the frequencies, or the number of husbands and wives marrying in each of these marriage age groups.

This table shows both the median average and the modal range of the marriage ages of the husbands to be higher than

TABLE IV. DISTRIBUTION OF AGES AT MARRIAGE.

Ages at Marriage	Husbands	Wives
13–17	2	99
18–22	303	732
23–27	691	461
28–32	282	120
33–37	91	37
38–42	40	14
43–47	15	7
48–52	9	1
53–57	3	0
58–62	4	1
63–67	1	0
68–72	1	0
Median Average	25.5	21.9

that of the wives. The commonly accepted belief that males marry at older ages than females is thus shown to be in agreement with the facts.

The following table shows the distribution of the husbands and wives born in the five fifty-year periods from 1651–1900 according to their average ages at first-marriage.

TABLE V. AVERAGE AGE AT FIRST-MARRIAGE BY PERIODS.

Period	Number of Marriages	Average Age of	
		Husbands	Wives
1651–1700	27	27.0	21.4
1701–1750	176	24.8	22.2
1751–1800	272	26.7	22.6
1801–1850	553	26.9	23.1
1851–1900	501	24.8	22.3
Total	1,529	25.8	22.6

Table V shows again that the age at marriage was higher for the husbands than for the wives. No clearly marked tendency for the ages to rise or to fall is to be noted from these results.

The correlation between the marriage ages of husbands and of wives at their first marriages and their fertilities will next be dealt with. In the first column of Table VI are given the various marriage ages and in the two succeeding columns the average number of children born to the husbands and wives married at each of these ages are given.

Clear evidence is given by these figures that there is a correlation between the age at marriage and fertility,—the lowest

TABLE VI. MARRIAGE AGES AND FERTILITY.

Marriage Ages	Average Number of Children for	
	Husbands	Wives
13–17	6.0	5.6
18–22	4.6	4.6
23–27	4.4	3.8
28–32	3.3	3.0
33–37	3.6	2.1
38–42	2.9	.9
43–47	2.7	.0
48–52	.8	.0
53–57	1.3	..
58-62	1.0	.0
63–67	1.0	..
68–72	.0	..

ages at marriage being associated with the greatest fertilities. This conclusion is of interest in connection with the problem of differential birth rates, since the portions of the population having the lowest ages at marriage possess the greatest child-bearing capacity to influence the composition of the next generation.

Next comes the fertility of parents by fifty-year periods. The children listed in each fifty-year period are those born within the period in question. The results are tabulated by fifty-year periods, the number of parental couples, the number of children born to them, and the average number which each parental couple gives birth to. The number of parental couples includes all of those grouped under any one period rather than the number giving birth to children. While the table is thus more correctly a measure of the fertility of the total number of married couples than of the fertilities of parents, the latter designation will be used, since those married couples with no children will be considered as having zero fertilities.

TABLE VII. FERTILITY OF PARENTS BY PERIODS.

Period	Number of Parental Couples	Number of Children	Children Per Married Couple
1651–1700	37	214	5.8
1701–1750	139	802	5.9
1751–1800	419	2,506	6.1
1801–1850	1,542	7,459	4.8
1851–1900	1,739	5,348	3.0
Total	3,876	16,329	4.2

The foregoing table shows a gradual rise in the fertility from 1650 until the close of the eighteenth century and a subsequent fall in the fertility during the course of the nineteenth century.

Table VIII shows the number of times of occurrence for each number of siblings from zero to twenty. Thus the table shows how many times there were zero children in the family, one child, two children, etc. The data are presented by the totals and subtotals for each fifty-year period also. The first column shows the number of children per family or the number of siblings, the next five columns contain the figures for the five fifty-year periods, and the final column gives the total number of occurrences for each number of siblings born.

TABLE VIII. OCCURRENCES OF SIBLINGS.

Number of Siblings	1651–1700	1701–1750	1751–1800	1801–1850	1851–1900	Total
0	4	5	33	64	116	222
1	0	7	17	137	358	519
2	3	7	39	206	373	628
3	0	14	25	203	300	542
4	2	12	40	210	217	481
5	7	20	36	140	135	338
6	5	12	38	150	79	284
7	4	17	45	110	69	245
8	6	14	37	109	41	207
9	3	11	32	67	28	141
10	2	10	27	58	14	111
11	1	7	23	41	7	79
12	0	0	10	26	1	37
13	0	2	10	16	0	28
14	0	0	2	3	1	6
15	0	1	3	2	0	6
16	0	0	0	0	0	0
17	0	0	0	0	0	0
18	0	0	0	0	0	0
19	0	0	1	0	0	1
20	0	0	1	0	0	1
Total	37	139	419	1,542	1,739	3,876
Average	5.8	5.9	6.1	4.8	3.0	4.2

Table VIII furnishes the data from which the percentages of the total number of families during each fifty-year period which had less than six children may be calculated. These figures for the five fifty-year periods from 1651 to 1900 were respectively .43, .48, .46, .62, and .86. A decrease in the percentage of families having over five children and an increase in the percentage of families having five or fewer children during each half of the nineteenth century is thus shown.

The modal figures for each fifty-year period may be obtained from Table VIII. From 1651 until 1800 these figures ranged from four to eight inclusive; from 1801 until 1850 they ranged from two to six inclusive; and from 1851 until 1900 they ranged from one to three inclusive. The families with the largest number of children were found during the period from 1751 until 1800, with the periods upon either side running close behind. If it were possible to get genealogical data showing the number of siblings born to the families during the past twenty years, undoubtedly smaller figures would be obtained than for the preceding period.

The subject of the ratio of sexes at birth is the next to be considered. The results are tabulated by fifty-year periods, according to the number of males and the number of females born in each of the periods; and according to the number of males born during each period for each 1,000 females. The last column thus affords the basis for determining the ratio of the sexes at birth, or the intensity of masculinity.

TABLE IX. RATIO OF SEXES AT BIRTH.

Period	Numbei of Males	Number of Females	Males Per 1,000 Females
1651-1700	111	103	1,077
1701-1750	418	384	1,089
1751-1800	1,290	1,208	1,067
1801-1850	3,838	3,621	1,059
1851-1900	2,693	2,655	1,014
Total	8,350	7,971	1,047

Sage obtained figures radically different from the foregoing. He found the ratio from 1621 to 1850·to be 1,350 to 1,000, and 131 test families had a ratio of 1,180 to 1,000. As he suggests, the cause for these ratios was probably the failure to record many female children in the genealogies with which he worked. Lewis, in "Natality and Fecundity" (9), found that the masculinity of the births of Scotland of the year 1855 was 1,049, a figure differing but slightly from 1,047, our figure for the masculinity of the total births.

The intervals between births will next be dealt with. The subject has received increasing attention recently from students of population. Table X shows the average number of years between births for each number of cases which afford the bases for these averages.

TABLE X. INTERVALS BETWEEN BIRTHS, BY NUMBER OF CHILDREN.

Number of Children	Number of Occurrences	Average Interval in Years
2	282	3.9
3	242	3.4
4	265	3.2
5	226	3.1
6	154	2.7
7	141	2.6
8	112	2.5
9	98	2.3
10	68	2.3
11	52	2.2
12	25	2.1
13	13	2.0
14	7	1.9
15	4	1.8
16	..	..
17	..	..
18	..	..
19	1	1.6
20	1	1.8

A steady and unbroken fall in the intervals between births is to be noted as the number of children in the family increases. As was to be expected, those families with the smallest number of children have the largest intervals between births and those families with the largest number of children have the shortest intervals between births. The high degree of correlation between the two conditions, as is shown by these figures, should be of interest to all concerned with the sizes of families and differential fertility rates among the various groupings of the total population.

Since the birth rate has fallen during the recent periods, and since the intervals between births increases as the fertility per family decreases, it is of interest to note to what extent the population as a whole shows evidence of a gradual lengthening of the intervals between births during the successive fifty-year periods. The following table presents figures which make for the validity of this disclosure. The data are tabulated by fifty-year periods, the number of cases which afford the bases for the averages, and the average intervals between births for each of the periods being set forth. The average for each period was found by obtaining the arithmetical mean for the average interval between births for each family having fecundity within that period. The objection may be raised that this average gives a weighting of one to each family. However, a sufficiently large enough number of items have been taken in each case to make the results of this method of weighting nearly the same as those obtained by any other method of weighting.

TABLE XI. INTERVALS BETWEEN BIRTHS BY PERIODS.

Fifty-Year Periods	Number of Occurrences	Average Interval
1651–1700	34	2.47
1701–1750	111	2.52
1751–1800	215	2.57
1801–1850	667	3.34
1851–1900	567	3.41

From 1651 to 1800 the fertility of the population and the average interval between births both remained so nearly stationary as to afford no basis for drawing any conclusions. From 1801 to 1900 there was a marked decline in the rate of fertility, as is shown by Table VII, and an equally marked increase in the average interval between births emerges in Table XI. Adequate proof is thus given to the contention that correlative to the decline in fertility which took place during the nineteenth century there was also an increase in the average interval between births. The increase in the intervals between births might serve to lower the fertility from eight to six, or any other corresponding drop, but could not suffice to account for the whole range of the drop which actually took place.

The question of the intervals between births has a close intimacy with the welfare of the children actually born. Various writers have dealt with this problem. Guyer, in "Being Well Born" (6), page 166, says that too short an interval between childbirths would seem to be an infringement on the rights of the child as well as of the mother. Ewart, in "The Influence of Parental Age on Offspring" (5), page 211, writes that children born at intervals of less than two years after the birth of the previous child still show at the age of six a notable deficiency in height, weight, and intelligence, when compared with the children born after a longer interval, or even with firstborn children. Ploetz, in "Neo-Malthusianism and Race Hygiene" (13), page 186, asserts that Neo-Malthusianism further affects the quality of the offspring by increasing the intervals between births. In families in which the parents intend to have only a few children, the mother is usually exempt from so frequent childbearing and she has ample time for regaining her strength.

The subject of twinning is the next to demand discussion. Eighty-seven cases were recorded, fifty-five of which occasioned the birth of children of the same sex while thirty-two resulted in the birth of children of the opposite sexes. No information can be given as to the number of identical twins coming from the same oosperm and as to the number of twins coming from separate oosperms, since nothing but the identical dates of birth were afforded in any case to know of the fact of twinning. The distribution of these cases of twinning throughout the reproductive period of the mother were as follows: eighteen were firstbirths, thirteen occurred during the middle of the mother's reproductive period, and fifty-six occurred at the end of that. The large majority covered in the last figure, coupled with the fact that nearly all of the cases of twinning occurred in large families, affords support for the hypothesis that twinning is associated with a waning capacity of fecundity. The eighty-seven cases of twinning included three families each having two pairs of twins. In each of these cases the twins came at the end of a large family of children.

From the distribution of the cases of twinning among the five genealogies it would seem safe to draw the conclusion that twinning does run in families and may be inherited in some very definite manner. In the following table the number of individuals in each of the five genealogies is included and the number of cases of twinning in each is shown.

TABLE XII. DISTRIBUTION OF CASES OF TWINNING BY GENEALOGIES.

Genealogy Letter	Number of Individuals	Cases of Twinning
A	4,184	11
B	4,116	32
C	4,147	11
D	3,421	25
E	4,744	8

The table shows that, for the number of individuals included, two of the genealogies present about three times as many cases of twinning as do the other three genealogies. Bell says, in "The Duration of Life and the Conditions Associated with Longevity," chapter 1, that due to interbreeding the persons listed in any genealogy constitute a sample of the general population rather than a sample of a particular family in which family traits might be expected to make their appearance. It is readily granted that every genealogy contains an admixture of many different strains of the population due to constant intermarriage, but this does not seem to constitute an adequate reason for denying the inheritance of certain family traits through successive generations. Indeed, studies of polydactylism, syndactylism, web-footedness, chorea, feeblemindedness, and insanity show that these characteristics are inherited in families, and this despite the factor of constant intermarriage. Hence it is probably no less warrantable to conclude that twinning is a trait definitely inherited in certain strains of the population.

After his study of the Scottish population statistics for the year 1855, Duncan declared that fertility in twins of wives-mothers gradually increases up to a climax at the age of 35–39, remains high even after 40, and vanishes rapidly after the age of 44. The fertility in twins is inverse to the natality in general: the former increases and the latter decreases as the age of the wife-mother advances.

The problem of the firstborn children which is now to be dealt with receives a ray of illumination from the genealogies, since they afford a most satisfactory means for comparing the fecundity of the firstborns with that of the total population. The capacity to survive until maturity and to reproduce themselves is the measure thus taken as the basis of comparison. The genealogies afford no means of discovering directly the relative capacities of the individual firstborn children and of the other children. The measure of the capacity to reach adult age and to give birth to a population commensurate with their numbers does function, however, as a test of the general viability and vitality of the firstborns as compared with that of the total population. In Table XIII, the average fertility of the total population stock included in the genealogies and of the firstborns is compared both for the fifty-year periods and for the entire period from 1651 to 1900.

TABLE XIII. FECUNDITY OF FIRSTBORN CHILDREN.

Period	Average Fertility of Total Stock	Average Fertility of Firstborns
1651–1700	5.8	6.4
1701–1750	5.9	5.8
1751–1800	6.1	5.7
1801–1850	4.8	4.9
1851–1900	3.0	2.8
Total	4.2	4.0

This table shows that the fertility of the firstborns who married was practically the same as the fertility of the total stock,—the slight difference between 4.2 and 4.0 being relatively small. The table is valueless, however, until a supplementary table is added which shows the relative percentages of the total population stock and of the firstborns who married and thus affords the basis for the table just given.

The following table gives the percentages of the total population stock and of the firstborns who married within each fifty-year period and within the whole period from 1651 to 1900.

TABLE XIV. PERCENTAGE OF POPULATION AND OF FIRSTBORNS MARRIED.

Period	Percent Married of Total Stock	Percent Married of Firstborns
1651–1700	.76	.77
1701–1750	.72	.71
1751–1800	.74	.73
1801–1850	.69	.69
1851–1900	.62	.60
Total	.69	.69

The foregoing table shows that the percentage of the total number of children born who married was the same as the percentage of the firstborn children who married. The results of the last two tables may now be combined. The first shows that the percentages of the total stock and of the firstborns who marry are the same, and the second shows that of those who do marry the fertility of the firstborns and of the total stock are practically the same. Hence the conclusion is justified that in so far as the powers of fecundity and fertility are concerned, that the firstborn children are neither above nor below the average set by the total population stock. While the studies into other phases of the problem may show a handicapping of the firstborn children in some instances, or may fail to do so in others, the evidence given by these figures seems quite incontrovertible that in so far as the factor of fecundity is concerned, the firstborn children are neither aided nor retarded by their position of birth.

Table I–XIV may be summarized as follows: Remarriages occurred three times as often among the men as among the women. No conclusions of any validity could be drawn concerning the duration of life over the different periods since many cases of infant mortality were not recorded in the early periods. In this study as in those done by Bell and by Sage, the ages of the males at death as recorded are higher than the ages of the females. A high correlation is shown between longevity or duration of life and fertility for both fathers and mothers. The table giving the distribution of the ages at marriage of husbands and wives shows that the husbands married at later ages than did the wives. The table giving the average ages of husbands and wives at marriage by fifty-year periods affords no basis for drawing any conclusion concerning a rise or fall in the age at marriage. A high correlation appears between the marriage age and the fertility of both fathers and mothers. The fertility of parents is found to increase slightly during the years from 1651 to 1800 and to decrease noticeably during the years from 1801 to 1900. The modal number of children per family during the five fifty-year periods from 1651 to 1900 shows a decrease from four to eight from 1651 to 1800 down to two to six from 1801 to 1850 and to one to three from 1851 to 1900. The table showing the ratio of the sexes at birth shows an intensity of masculinity of 1,047 or a ration of 1,047 males to every 1,000 females. The average interval between births appears to decrease as the number of children in the family increases, and it is also shown that the average interval between births was from 30 to 40 per cent. greater dring the nineteenth century than it was during the eighteenth. The data about twinning show that the majority of cases occurred near the close of the reproductive period of the mother and that twinning probably ran in certain families. Finally, in dealing with the problem of the firstborn children it is shown that the fertility of the firstborns was neither above nor below that of the population strains which were dealt with taken as a whole.

As this summary would suggest, the aim of the whole work has been to obtain exact and concise information in regard to all of the subjects which have been under discussion. While the immediate purposes involved made it necessary that all interpretations become secondary and ancillary to the actual processes of compilation and tabulation, the more ultimate goal to be desired is that the resulting presentation may serve as supplementary source material to the censuses in obtaining statistical information in respect to the phenomena of population which have been under investigation.

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By vote of the Board of Directors, the price of the publications of our Association will hereafter be $3.00 per annum; and the price per volume has been increased from $4.00 to $6.00. The Board has decided to allow single numbers to be sold at the usual price. This change is, of course, subject to ratification at the Annual Meeting of the Association, which no doubt will be obtained. It is proper, however, that subscribers should be given notice in advance.

The Editor.